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Sense Organs of Nereis. — F. E. Langdon[1] has described three kinds of sense organs in the skin of *Nereis virens* Sars. The diffuse sense organs consist of groups of bipolar nerve cells whose bodies form a part of the external epidermis, whose peripheral ends extend as sense bristles into the surrounding water, and whose central projections are in the form of nerve fibres terminating probably as pericellular nerve baskets around ganglion cells in the central nervous organs. The diffuse sense organs are most numerous in those parts of the body most exposed to contact, and represent organs for mechanical and possibly chemical stimulation. The prostomium possesses an anterior and a posterior pair of cephalic organs, each of which consists of a group of bipolar cells whose peripheral processes end in the epidermis, and whose central processes terminate in the brain. The anterior pair differ from the posterior in that their cell bodies lie between epidermis and brain instead of in the brain. The third class of organs consists of groups of spirally arranged cells, hence called spiral organs. The central processes from these organs take a direction appropriate for nerve fibres, but have not been traced into nervous organs. Their function as epidermal eyes is, therefore, hypothetical.

P.

Breeding Infusoria. — As bearing upon the problem of death it is interesting to note that the doctor's thesis of Dimitri Jonkowsky[2] records some partial repetition of Maupas's famous work upon Infusoria. Maupas found degeneration and death befell many Infusoria when they were bred for many generations without conjugating, but that the change in the nuclear machinery that takes place in conjugation would start another long series of generations. That degeneration is necessary without such renewal seems less probable from the experiment of the present author, though his evidence is not conclusive. In the case of *Pleurotricha lanceolata* (Ehbg.) 458 generations were reared in eight months and yet no degeneration was found, except in a few cases in the last generation. He suggests the rapidity with which the animals breed, which was greater in Maupas's experiments, may be a factor in the occurrence of degeneration. Bearing in mind the sensitiveness of many Infusoria to the chemical and physical nature of the liquid they are reared in, it seems not unlikely that degeneration may depend upon other

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[1] Langdon, F. E. The Sense Organs of Nereis virens, Sars. *The Journ. of Comp. Neurology*, vol. x, No. 1, pp. 1–77, Pls. I–III, 1900.

[2] *Verh. des Naturhist. med. Verlins zu Heidelberg*, Bd. vi, 1898.

factors than the lack of conjugation, and that we do not yet know any limit to the length of life these creatures may have under proper conditions.
E. A. A.

Swiss Infusoria. — The school of Swiss zoölogists at Geneva, under the able leadership of Professor Yung, has in recent years shown great activity in the investigation of the local fauna. This work has been of high order and is abundantly illustrated with lithographed plates. That an interest in the Infusoria would still linger in the home of Claparède is indeed to be expected, though a list of new genera and species of Ciliata from the environs of Geneva comes as a surprise. Nevertheless Dr. J. Roux has discovered there a dozen new ciliates whose structure and relationships he discusses at length in a recent paper.[1] He also describes and fully figures a score of other forms concerning which his studies have added important information. Of prime interest is his *Monomastix ciliatus* — a new member of the Mastigotricha which combines characters of the Ciliata and Flagellata, having the cilia and nuclear conditions of the former and the flagellum of the latter. An amplified description is given of *Lionotus vesiculosus* Stokes, originally described as from this country. The discussion of *Loxodes rostrum* sheds light on a number of controverted points; the animal is flattened dorso-ventrally, not laterally, and the peristome is ventral, though placed to the left, being bordered by fine cilia and transverse striæ which have heretofore been interpreted as long cilia. The genus should be removed from the Trachelina to a new family, Loxodina. Various American species of this genus have been ill-founded, resting merely on inconstant variations in color, number of nuclei, and excretory vacuoles. On account of its superb illustrations and the critical character of the discussions, this paper is of especial value to all American workers in this much neglected group, and it is to be hoped that Dr. Roux will continue his studies.
C. A. K.

Growth in the Rhizopodan Shell, after its formation at the time of the division of the parent, as maintained by Rhumbler, is contested by Penard in a recent paper.[2] In observed cases in a

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[1] Roux, J. Observations sur quelques ciliés des Environs de Genève, avec la description de nouvelles espéces. *Rev. Suisse de Zoöl.*, tome vi, pp. 557–636, Pls. XIII, XIV, 1899.

[2] Penard, E. Sur la croissance supposée de la coquille chez les Thécamœbiens. *Arch. Sci. Phys. et Nat.*, IV Pér., tome vii, 23 pp., 1899.